Descriptions

N-channel Double MOSFET in a SOT23-6 Plastic Package. It is ESD protested.

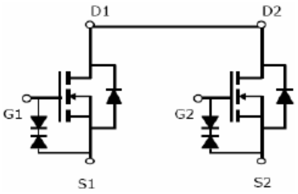
Features

advanced trench technology to provide excellent RDS(on), low gate charge.
V_{DSS}=20V / V_{GSS}=±12V I_D=7A
$R_{DS(ON)}$=16mΩ(typ.)@V_{GS}=4.5V
$R_{DS(ON)}$=19mΩ(typ.)@V_{GS}=2.5V

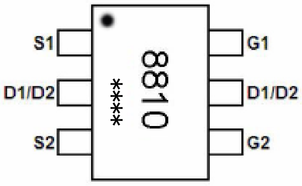
Applications

Use as Load Switch or PWM application.

Equivalent Circuit



Pinning



Absolute Maximum Ratings(T_a=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Drain Current - Continuous		I_D(T_a=25℃)	7.0	A
Drain Current - Continuous		I_D(T_a=70℃)	5.7	
Drain Current – Pulsed		I_{DM}	25	A
Gate-Source Voltage		V_{GS}	±8.0	V
Power Dissipation		P_D(T_a=25℃)	1.5	W
Power Dissipation		P_D(T_a=70℃)	1.0	
Junction-to-Ambient[A]	t ≤ 10s	$R_{\theta JA}$	83	℃/ W
Junction-to-Ambient[AD]	Steady-State		120	
Junction-to-Lead	Steady-State	$R_{\theta JL}$	70	℃/ W
Junction and Storage Temperature Range		$T_{j,}$ T_{stg}	-55 ~ 150	℃

Electrical Characteristics(T_a=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=16V V_{GS}=0V			1.0	μA
Drain-Source Leakage Current		V_{DS}=16V V_{GS}=0V T_j=85℃			10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V V_{DS}=0V			±10	μA
On state drain current	$I_{D(ON)}$	V_{GS}=4.5V V_{DS}=5V	25			A
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250μA	0.45	0.6	1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V I_D=6.0A		16	20	mΩ
		V_{GS}=2.5V I_D=6.0A		19	25	
Forward Transconductance	g_{FS}	V_{DS}=5.0V I_D=7.0A		50		S
Forward On Voltage	V_{SD}	V_{GS}=0V I_S=1.0A			1.3	V
Maximum Body-Diode Continuous Current	I_S				2	A
Input Capacitance	C_{iss}	V_{DS}=10V V_{GS}=0V f=1.0MHz		1295		pF
Output Capacitance	C_{oss}			160		
Reverse Transfer Capacitance	C_{rss}			87		

Electrical Characteristics(T_a=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Gate resistance	R_g	V_{DS}=0V V_{GS}=0V f=1.0MHz		1.8		KΩ
Total Gate Charge	Q_g	V_{DS}=10V V_{GS}=4.5V I_D=7.0A		10	14	nC
Gate Source Charge	Q_{gs}			4.2		
Gate Drain Charge	Q_{gd}			2.6		
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=10V V_{GS}=4.5V R_G=3.0Ω R_L=1.54Ω		280		ns
Rise Time	t_r			328		ns
Turn-off Delay Time	$t_{d(off)}$			3.76		μs
Fall Time	t_f			2.24		μs
Body Diode Reverse Recovery Time	t_{rr}	I_F=7A dI/dt=100A/ms V_{GS}=-9V		31		ns
Body Diode Reverse Recovery Charge	Q_{rr}	IF=7A dI/dt=100A/ms V_{GS}=-9V		6.8		nC

Notes:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using ≤ 10s junction-to-ambient thermal resistance.

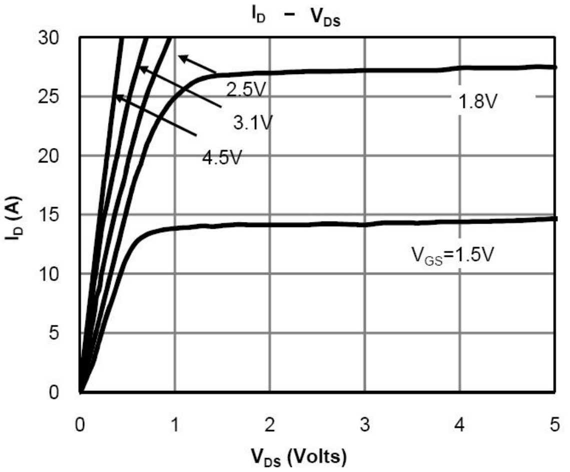
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.

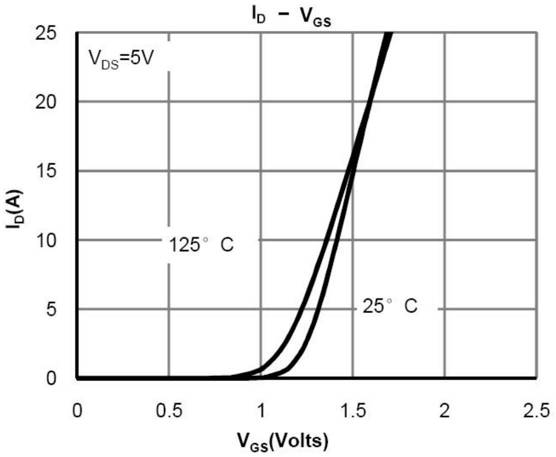
D. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

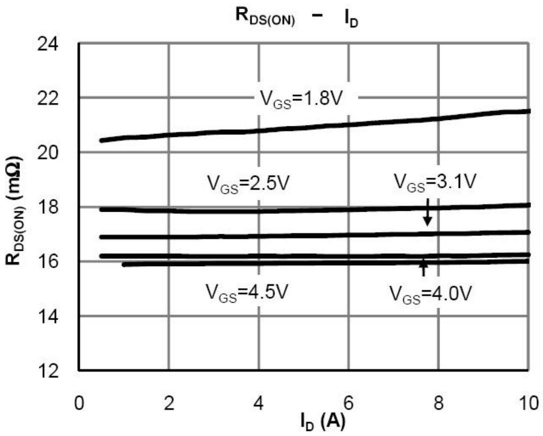
E. The static characteristics in Figures 1 to 6 are obtained using <300ms pulses, duty cycle 0.5% max.

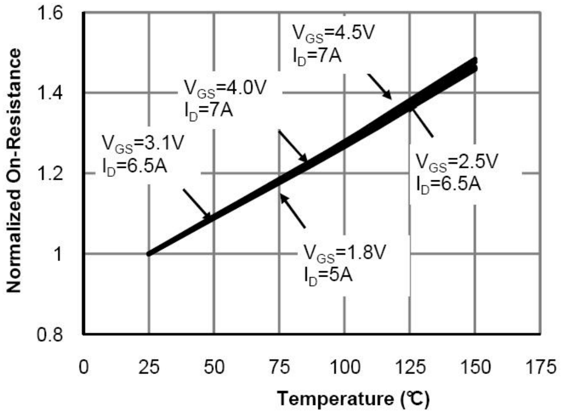
F. These curves are based on the junction-to-ambient thermal impedence which is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

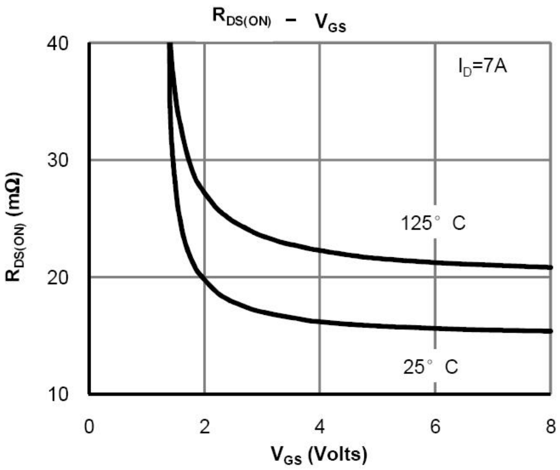
Electrical Characteristic Curve

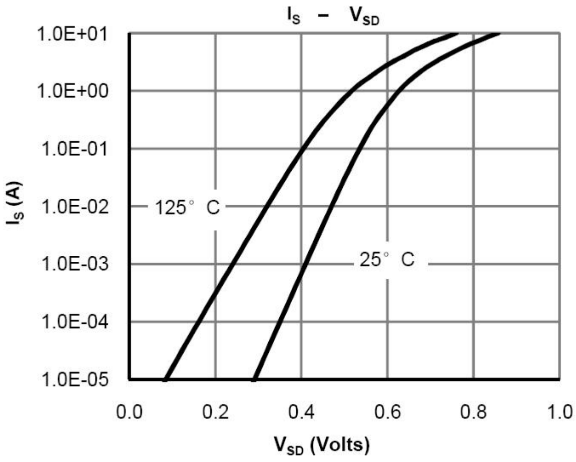




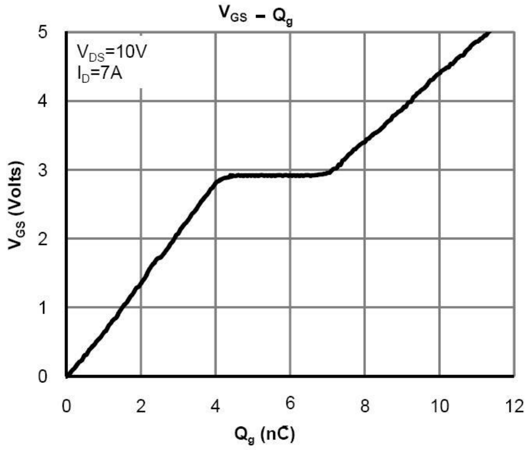


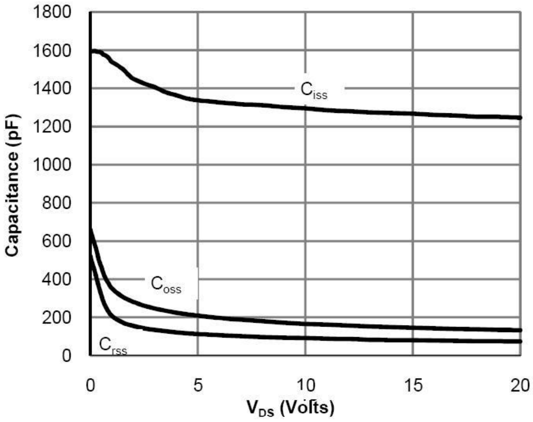


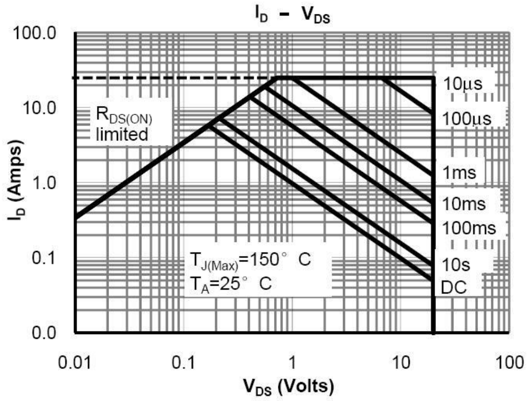


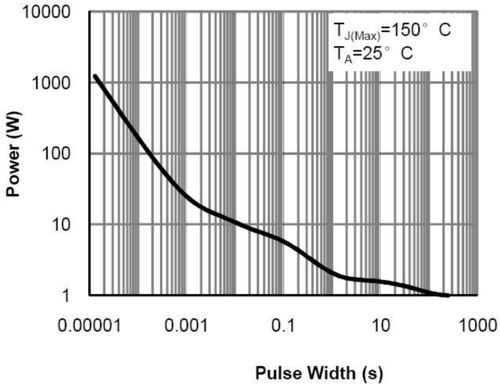


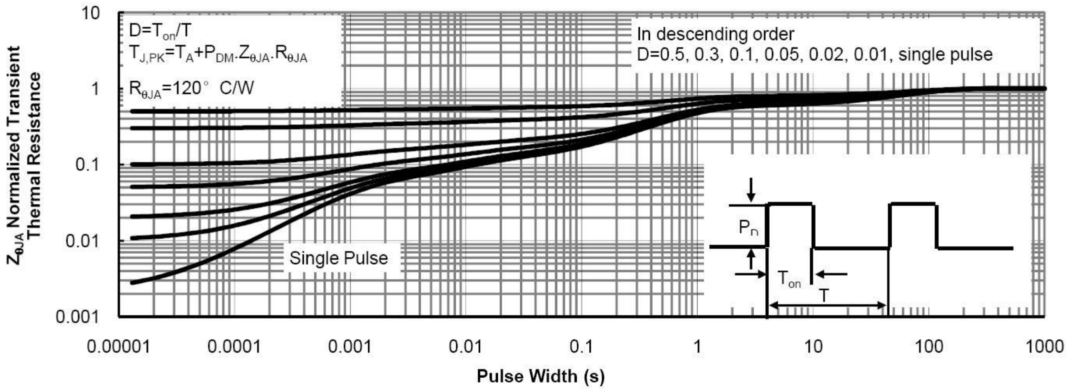
Electrical Characteristic Curve



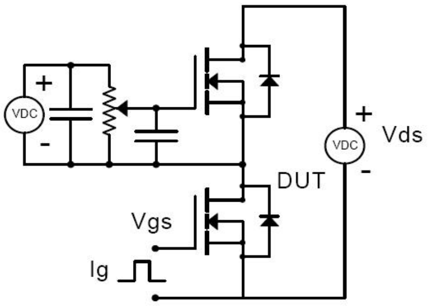


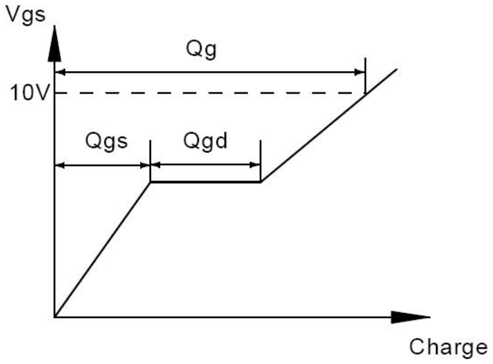




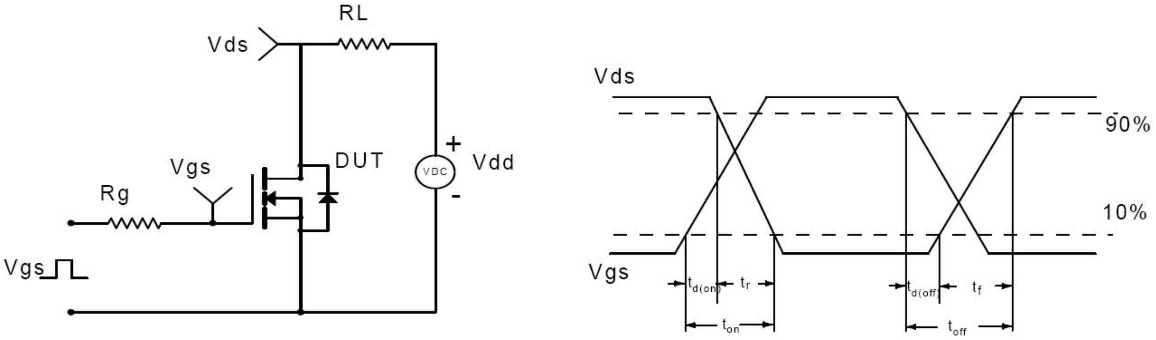


Test circuit and waveform

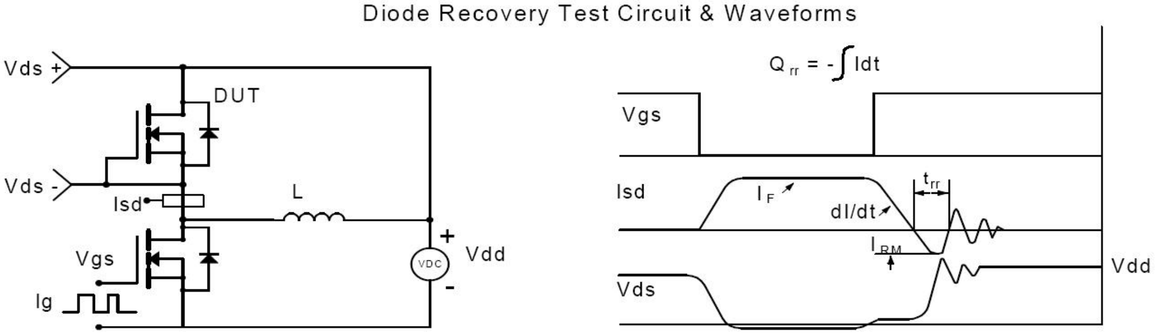




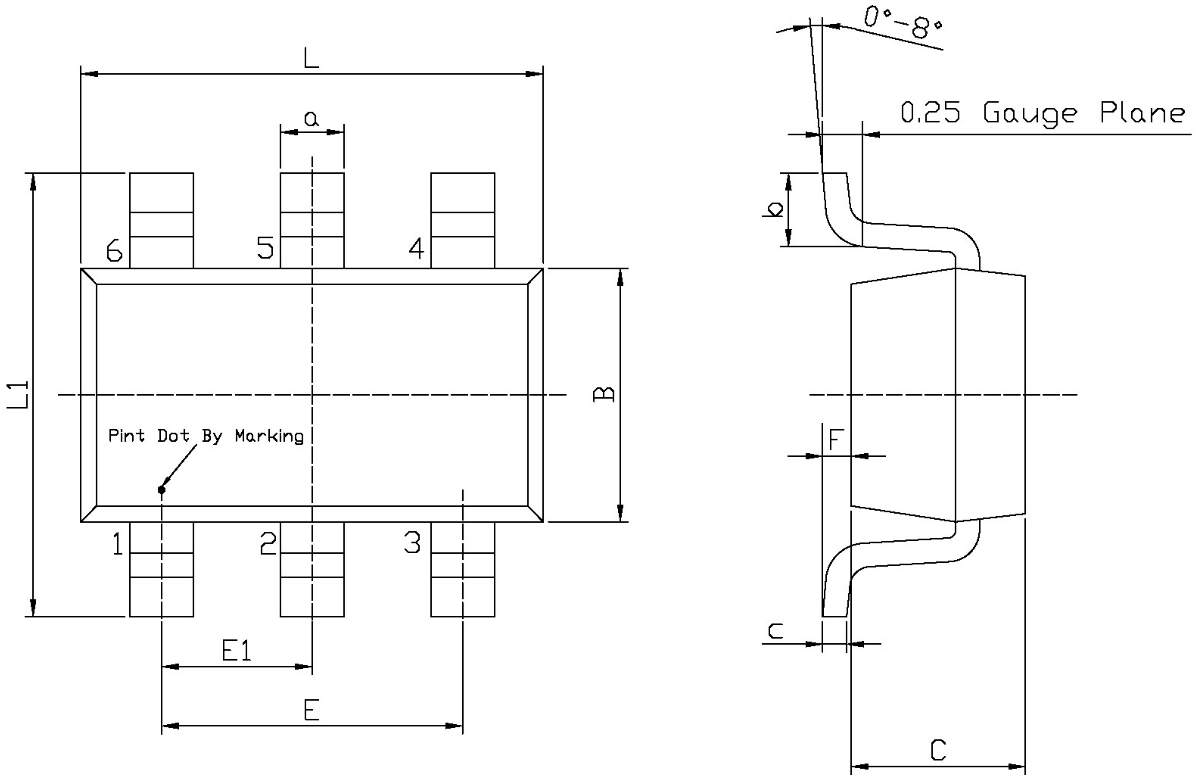
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Dimensions



Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	E1	0.85	1.05
B	1.50	1.70	a	0.35	0.50
C	0.90	1.30	c	0.10	0.20
L1	2.60	3.00	b	0.35	0.55
E	1.80	2.00	F	0	0.15

SOT23-6